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Pest Eradication Work In Florida

Being A Summary Of The Work Done By The Florida State Plant Board To Eradicate Many Of The Pests Which Have Attacked Florida Agriculture, By Extention Editor, Florida Agricultural Experiment Station—

J. Francis Cooper

If the selectmen of Medford, Mass., had been fully cognizant of the future spread and damage of the gipsy moth in 1869, when informed by Professer Leopold Trouvelot that a high wind had blown down his wire cage in which some of these insects had been confined, they might have moved heaven and earth to run down and blot out the last one of the escaped moths. The town wasn't ablaze, however, and the city fathers thought the professor was "bughouse" anyway. It was not until nearly 20 years later when the escaped gipsy moths had given birth to thousands of their kind which had spread over large areas, that the full extent of the danger and damage from this pest was realized by other than a few entomologists.

Although by that time swarms of caterpillars were covering houses and destroying trees, thus attracting the attention of the entire state, the Massachusetts Department of Agriculture inaugurated a repressive campaign which was so efficient that by 1900 it was evident that complete eradication of the pest was almost assured. At this point politicians entered the picture and the whole thing went blooey. The 1900 Massachusetts legislature, asked for an appropriation of $200,000 to complete the task, appointed a legislative committee to investigate the project. After an investigation this committee reported:

WILMON NEWELL
Dean, College of Agriculture, University of Florida, Gainesville, Fla., of Florida

"We find no proof that garden crops or woodlands have suffered serious or lasting injury . . . It appears that fears of the farmers have been unnecessarily and unwarrantably aroused, evidently for the purpose of securing the effect of these fears upon the matter of annual appropriations."

What a familiar ring that report has! Similar reports, statements and charges on the part of the uninformed have been heard in connection with nearly every other pest for which officials asked money with which to conduct eradication activities.

The gipsy moth was more generous than most insects of its kind—it gave the citizens two opportunities to eradicate it, once when it was first liberated and again 20 years later. Most bugs multiply so rapidly that after the lapse of a few years the opportunity for completely ridding the land of them is irrevocably lost. They go merrily on their way, wreaking damage and destruction, and the best the grower can do is to attempt control measures which may not be wholly effective, and which certainly entail vast expenditures and trouble.

Considerable water has flown over the dam since 1869, however. A new psychology concerning destructive

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Citrus fruits, flavor

The Unrecognized Problem

Being A Dissertation Inspired By The Writings Of Harry L. Askew And C. E. Stewart Which Appeared In The August Issue Of The Citrus Industry, By The Director Of The Indian River Citrus Institute, Inc.,

Geo. C. Olmsted

The articles by Messrs. Askew and Stewart in the August number of THE CITRUS INDUSTRY lead directly to the point about which the whole industry revolves.

And that point is FLAVOR.

No matter how much juice a fruit may have, if it is watery and tasteless or has other than a good flavor its sale is an economic impossibility in quantity. The consumer demands more than a solution of citric acid and sugar. The March number of FOOD INDUSTRIES Magazine editorially states: " . . . We still believe that the surest way to build repeat business is to produce a food that tastes so well that the consumer comes back for more for the sheer satisfaction of eating it. There is little future for a food that requires logical reasons as to why it should be consumed if it is lacking in appetite appeal."

Since infancy, doubtless most housewives have eaten more or less citrus. When one makes her purchases she buys upon **anticipated** flavor. Unconsciously she associates the fruit in her hand with her previous citrus-eating experiences. In making her purchase she uses her various senses in an attempt to appraise the flavor; by sight she observes the skin; by touch she notes the texture of the skin and gets an idea of firmness and weight; she may sniff for its odor but she cannot "hear" the fruit and she cannot taste it until she gets it home.

Mr. Stewart states that oranges must have a **bland** flavor and that northerners prefer what we call **insipid** fruit. Dr. H. H. Hume uses such adjectives as **rich, vinous, very good, sweet, agreeable, sprightly** and **excellent.** The Florida Citrus Commission does not discuss flavor but tackles the problem from the viewpoint of maturity: a "color added" orange is not mature until the ratio is 8.5 to 1 or over, but all other oranges are mature when the minimum is 8 to 1. In Agricultural Experiment Station Bulletin No. 115, Mr. Collison refers to the taste of oranges as **sour, tart, sweet** and **very sweet.** Packing house employees not infrequently speak of flavor as **sorry** and **medinary** Here, then, we have, including the ratios, sixteen descriptions of the flavor of an orange.

This situation clearly demonstrates the dire need of a method or scale that with reasonable accuracy will describe the flavor. Electricity is measured by joules, Henrys, volts, amperes, etc.; temperature by degrees; heat by B.T.U.'s; sound by decibels; light by candlepower; and work by the foot-pounds; but science has developed no method by which flavor can be measured.

Other industries get around this by having official tasters. We know of liquor tasters, tea tasters, and cheese and butter tasters. It is said that coffee blenders become so proficient that they can taste a sample and tell what part of Brazil produced the bean. This brings up the challenge: Can our citrus inspectors be trained to become proficient citrus tasters? Can we do away with chemical and physical tests and successfully substitute skilled tasting ability? Perfumers appraise their products by their trained sense of smell.

Buyers of crude maple syrup make their purchases from farmers on two counts: (1) they use state-provided color standards, and (2) they taste the syrup. They back their tasting skill with their dollars. Can you imagine a cash-buyer of citrus going into a grove and tasting the fruit to appraise its value? Do we know much about the influence of fertilizers upon flavor?

Now comes another known fact: We don't agree as to what constitutes a **good** orange, tangerine or grapefruit flavor. In some experiments along this line for several weeks last winter I took samples of fruit, placed them in an electric refrigerator overnight, extracted the juice next morning and immediately placed it into chilled half-pint bottles which were then packed in ice in my car. I then distributed these to six packing houses from New Smyrna to Ft. Pierce where chosen tasters critically sampled those numbered bottles. No taster knew the origin of the juice or whether it was Valencia, Pineapple, Jaffa, Indian River Common, or whether Duncan or Marsh Seedless. Each taster was provided with a flavor-scale so that he was forced to use the same language as the other tasters in expressing his findings. Here is a copy of the reports on a Valencia, total solids 12.40, % Acid 0.84, Ratio 14.80. House No. 1, A766N8; House No. 2, A885N8; House No. 3, A875N8; House No. 4, A765N8; House No. 5, B675N8; House No. 6, A885N8; Laboratory A765N6. Note that Nos. 2 and 6 are identical. This scale takes in the usual factors affecting flavor as well as consumer satisfaction.

Indeed it would be revolutionary if the law required the flavor to be stamped on each box according to some such flavor scale. Every packing house in the state would file objections but — the consumer is entitled to it.

Psychologists tell us that our sense of taste embodies four items: salt, sweet, sour, and bitter, and that all others are but combinations of these four. Our sense of smell greatly influences our appraisal of flavor. One whose nasal passages are swollen by a cold often fails to appreciate flavor — nothing tastes good to him. An additional factor is that of **mouthfulness** or "vollmundigkeit" as the Germans call it; thus, menthol gives an effect of coolness in the mouth and pepper bites the tongue.

Roberts and Gaddum in **Ind. & Eng'g. Chem.** give some excellent analysis of Florida citrus but they were unable to report on the **flavor** of the samples tested because they had no flavor scale with which to express themselves. Here are extracts of two of their analyses:

No. 1, Brix, 11.80; % Acid, 0.98; Ratio, 12.04. No. 2, Brix 14.33; %

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Citrus Growers Institute,

Annual Citrus Growers Institute

Fifth Meeting Will Be Held At Camp McQuarrie, Near Astor Park In Lake County — Four Day Program Is Announced Filled With Interesting Addresses And Opportunities For Discussion Of Citrus Growers' Problems.

Following is the program of the Fifth Annual Citrus Growers' Institute to be held at Camp McQuarrie in the Ocala National Forest, Sept. 5-9, under the direction of the Florida Agricultural Extension Service, sponsored by the Lake County Horticultural Association.

All citrus growers of the state are invited and urged to attend.

Monday, Sept. 5

2:00—Registration.

6:00—Supper.

8:00—W. T. Nettles, Extension District Agent and Camp Director, presiding. Official opening of the Fifth Annual Citrus Growers' Institute. Introduction of staff. Address of Welcome, Karl Lehmann, secretary Lake County Chamber of Commerce. Musical program and special entertainment.

Tuesday, A. M. Sept. 6
PRODUCTION DAY
Clifford R. Hiatt, president Lake County Horticultural Association, presiding

9:30—Meeting called to order. Entertainment.

9:45—"Progress Report on the Work at the Citrus Experiment Station during the Past Year," by Dr. A. F. Camp, Horticulturist in charge, Citrus Experiment Staton.

10:30—"The Present Trend of Variety Production of Citrus Fruits in Florida and Where We Are Headed" by Dr. H. Harold Hume, Assistant Director, Research, Florida Experiment Station.

11:15—"Does Grove Irrigation Pay," by R. H. Howard, Assistant Extension Economist, Florida Agricultural Extension Service.

12:00—Adjourn.

12:15—Dinner.

Afternoon Session
Col. C. E. Lester, Presiding

1:30—Musical Program.

1:45—Address by Hon. Joe Hendricks, member United States Congress. (Invitation accepted, affairs of state permitting.)

2:30—"Efficiency of Fertilizer Practices" by Dr. O. C. Bryan, Bartow.

3:15—"Effect of Seasonal Conditions on Citrus Insects" by Prof. J. R. Watson, Entomologist, Florida Experiment Station.

4:00—"The Short Co-operative Research Grove at Clermont" by Dr. M. N. Walker, chairman, Research Committee, Lake County Horticultural Association.

6:00—Supper.

8:00—Entertainment.

Wednesday, Sept. 7
MARKETING DAY
F. T. Laird, Presiding

9:30—Meeting called to order. Entertainment.

9:45—"Selling Florida Citrus by the Pound" by E. F. DeBusk, Citriculturist, Florida Agricultural Extension Service.

10:30—"Citrus Marketing Costs" by D. E. Timmons, Extension Economist, Marketing, Florida Agricultural Extension Service.

11:15—"What We Can Hope To Attain Through A Citrus Marketing Agreement" by H. L. Pringle, Lake County Grower.

12:00—Adjourn.

12:15—Dinner.

Afternoon Session
H. C. Brown, Presiding

1:30—Musical Program.

1:45—Address: Hon L. M. Rhodes, Commissioner, State Marketing Bureau.

2:30—"The Road to Market," by M. C. Gay, Principal Agricultural Economist, Farm Credit Administration, Washington.

3:15—"The Advertising Program for Florida Citrus," by L. W. Marvin, advertising manager, Florida Citrus Commission.

4:00—"The Possibilities of a Juice Vending Machine," E. F. DeBusk.

6:00—Supper. Note: Camp will adjourn to Juniper Springs at 5:00 P. M. for a fish fry which will be served there at 6:00 P. M.

8:00—Entertainment at Camp.

Thursday, Sept. 8
Organization Day
J. J. Banks, President Orange County Citrus Growers Association Presiding

9:30—Meeting called to order.

9:45—"Some Problems of the Florida Citrus Industry" by Marvin Walker, Lakeland.

10:30—"What California Citrus Growers Have Accomplished by Being Organized" by R. P. Burton, Leesburg.

11:15—"The Present Status of Grower Organizations," by Frank T. Laird, Lake County Grower.

12:00—Adjourn.

12:15—Dinner.

Afternoon Session
Chas. R. Short, Presiding

1:30—Musical Program.

1:45—Address: Hon. Wilmon Newell, Dean, College of Agriculture, Director, Agricultural Experiment Station, University of Florida.

2:30—"What Orange County Hopes To Accomplish Through A Growers Organization," by J. J. Banks.

3:15—"Pit Falls to be Avoided in a Growers Organization" by Dr. C. V. Noble, Agricultural Economist, Florida Experiment Station.

6:00—Supper.

8:00—Entertainment — "Florida Beauty Spots", a motion picture in full color accompanying a lecture by Karl Lehmann, Sec'y, Lake County Chamber of Commerce and Chairman Publicity Committee, Lake County Horticultural Association.

Friday, Sept. 9

9:30—Meeting called to order. Entertainment. Forum discussion on Certain Vital Problems Affecting the Industry led by Clifford R. Hiatt, President, Lake County Horticultural Association.

10:30—Camp adjourn.

Costs

The management of the Citrus Growers Institute is endeavoring to run the cost of the Institute as low as possible to the growers. This year, the cost for those registering Monday afternoon and staying through Friday breakfast is $5.00. For those coming for the day, dinner and supper will be served for 50c each meal.

Reservations Necessary

Growers planning to spend the week in Camp should make their reservations, with R. E. Norris, County Agent, Tavares, Florida, as soon as possible. When reservations for sleeping facilities are taken up it will be impossible to take care of any more over night. A dollar deposit

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The Citrus Industry

with which is merged The Citrus Leaf
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A GREAT RECORD

Elsewhere in this issue is printed an article by J. Francis Cooper reviewing the work of the State Plant Board in the eradication of insect pests and diseases — not control, but eradication.

Agriculturists generally, and citrus growers in particular, are inclined to be pretty well satisfied if they meet with a moderate degree of success in the control of insect pests and plant diseases — but the members of the Florida State Plant Board are content with nothing less than eradication, if the pest or disease is discovered in time.

To date, the citrus canker, the Mediterranean fruit fly and the citrus black fly, all pests of major importance, have been completely eradicated — and to the Florida State Plant Board is due the major credit for that successful outcome.

New problems are constantly arising from the introduction of foreign pests and foreign diseases which attack and seriously threaten American fruits, vegetables and farm crops. Where formerly national and state authorities in the horticultural field were content to adopt and recommend control measures, they now strike at the roots of the pests and diseases with a view to eradication.

Florida is fortunate in having a State Plant Board composed of men who are alert to the threat of every new importation of insect pest or plant disease.

AN ORGANIZATION OF PROMISE

Florida has been blessed (or cursed) by a multitude of citrus organizations, all good in their particular field and all founded with the idea of betterment of the industry. Unfortunately, it has been almost impossible for any two of these organizations to agree on a settled program for any length of time.

Florida Citrus Growers, Inc., the latest organization in the field, and one composed entirely of growers, appears to give promise of bringing about a degree of harmony and cooperative effort which has heretofore been sadly lacking. It is to be hoped that this promise may be realized.

MAY REACH COMMON GROUND

The following from the California Citrograph expresses a thought with which The Citrus Industry is in hearty accord:

"It seems that more than the usual number of Florida citrus men have been coming to California this summer. During the Florida season many Californians went to that state to investigate the industry there.

"This is a good sign. Intimate contact with those having like problems gives one an appreciation and understanding that can be gained in no other way.

"While the citrus producers of the respective states are vigorously competing with one another for the consumers' favor, eventually they may reach a common bond and join together to preserve their markets against aggressive non-citrus competition—who can tell.

"That is something to be desired. And the best way to bring it about is to meet the other fellow on his home grounds."

From its very inception, The Citrus Industry has believed that the citrus growers of all American producing states should get together on some common ground for the good of all cncerned.

It is true that Florida growers have problems of citrus culture and marketing which are peculiarly their own. The growers of California, Texas and Arizona have problems peculiar to those states. But on the broad problems of citrus as a commodity, the interests of all the American producing states are the same. The successful solution of these problems depends upon a thorough understanding and complete co-operation between the growers of the several states.

As Citrograph well adds: "Eventually they may reach a common bond and get together to preserve their markets against aggressive non-citrus competition—who can tell?"

SAME OLD PROGRAM

With the opening of the citrus shipping season it becomes apparent that the same old program of rushing immature fruit to market is being pursued in some quarters.

Past experience seems to have taught no lesson to "early bird" shippers and "early bird" growers who insist upon rushing fruit to market before it becomes palatable. Every box of such fruit sent to market now in the hope of securing a higher price, means a loss in price on ten boxes of good fruit later in the season.

It is to be hoped that the inspection service may be successful in curtailing such shipments to the minimum.

National agricultural economists have recently stated that fertilizer paid the biggest dividends of any one factor in the production of citrus — something that every Florida citrus grower already knew. It is heartening, however, to hear that technical opinion confirms the practical knowledge of our growers.

PEST ERADICATION WORK IN FLORIDA

(Continued from page 5)

insects which gain footholds in this country gradually is becoming dominant in the thinking of officials and the public. Experience has shown that the imposition of quarantines, and nothing more, is not and never will be effective in keeping a new pest confined to a small area, once it has become fully established. The new school of thought, therefore, would uproot the new pest before it spreads, throw it unceremoniously out of the window or into the ocean, and thereby relieve American growers of the constant threat or certainty of paying toll to another voracious and unwelcome guest.

A Citrus Canker Eradication Crew Disinfecting Shoes, Clothes and Tools Before Leaving An Infected Grove

Complete eradication of major insect enemies — and one disease — has been accomplished enough times to demonstrate that it is possible, even in the face of apparently insurmountable difficulties. The State of Florida probably has been the scene of more eradication effort than any other commonwealth, and in every case success has crowned the endeavors there, removing the necessity for irritating and expensive quarantines, constant control measures and burdensome annual losses.

In April of 1938 the Florida State Plant Board announced that the citrus black fly had been eradicated from the island of Key West, and the quarantine which had been in effect for more than three years to keep this pest from gaining admission to the mainland was lifted. Suspension of the restrictions came at a fortunate time, just as the new overseas highway was opened for travel between the keys and the mainland. Restrictions would have been onerous to the traveling public, and with greatly increased automobile traffic the task of keeping the black fly from crossing to the mainland would have been vastly more difficult.

The black fly is the third major plant pest eradicated in the last 23 years from the confines of the Alligator State. First to go was the citrus canker, second the Mediterranean fruit fly. The pink boll worm has been cleaned from the cotton fields of the northern counties, but is still present on the keys and in southern counties where the wild cotton tree growns.

While Florida's record is most impressive, that state does not have a corner on the eradication market. The pink boll worm has been driven from Louisiana and eastern Texas, as well as southern Georgia; citrus canker has been literally burned out of Alabama, Mississippi and the Rio Grande Valley of Texas, where one outbreak occurred, following the example which Florida set. It seems possible that the phony peach disease may be dug out of the orchard soils of 11 states, where federal and state agencies are waging a campaign against the trouble and are making headway.

There is an interesting story behind every one of the eradication endeavors. All were prosecuted under difficulties, and some overcame obstacles which would have struck terror to the hearts of the timid.

While the federal government, through the United States Department of Agriculture, has supplied most of the funds and furnished direction, state forces have cooperated valiantly and well. In Florida the State Plant Board, created in 1915, has proven its mettle every time it has been in the crucible.

Its recent bout with the black fly, a pest of magnitude in the Bahamas, Cuba, and the Canal Zone, was a minor but none-the-less interesting battle. The pest was discovered on the island of Key West on August 10, 1934, and immediately the Plant Board undertook to eradicate it, al-

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The Mediterranean Fruit Fly Caused Oranges and Grapefruit To Decay and Fall From the Tree, As In This Grove Near Orlando, Florida. Eradication of the Pest Saved Growers From An Annual Loss

Agricultural Conservation Program

The 1938 Conservation Program

A Review Of The Agricultural Conservation Program Being Conducted In Florida — Indicating That This Has Been A Busy And Productive Year. Viewed By State Administrator Officer . . .

H. G. Clayton

This has been a busy year for all persons conected with the operation of the Agricultural Conservation Program as things have moved in rapid order. The county offices, local committeemen and the state office have been busy places handling the many details which affect so many farmers.

One of the first jobs was to make the payments in connection with the 1937 Program. This involved making grant payments to 24,336 Florida farmers for a total of $1,319,-492. These payments were made for doing certain definite things which tend to improve the farm income and improve the soil.

The Agricultural Conservation Program is a purely voluntary program and farmers who participate do so of their own accord. The same type of program is in effect in 1938 as in 1937, with the exception of special provisions for cotton and flue-cured tobacco farms. These two commodities in 1938 are under marketing quotas set up by the Farm Act of 1938, which makes special provisions for them and somewhat alters the agricultural program so that they can be handled under provisions for both. Since the farm Act applies to all farms, it covers both the majority of the producers, those who wish to voluntarily cooperate and the smaller minority, some of whom are not entirely in sympathy with the purpose and intent of the program. About 85 to 90 percent of the producers are willing to go along on a voluntary program and 10 to 15 percent either prefer not to do so or find it to suit their plans best to go a different route from that favored by the larger group. One difficulty faced this year has been that the Farm Act was passed when planting time in Florida was already at hand and plans for the crop year already made.

I will briefly outline some of the things which have been done since January. We have secured farm worksheets which carry the farm data for about 13,000 farms in addition to the farms that were in the 1937 program. Cotton acreage allotments and tobacco acreage allotments have been computed for each of the cotton and tobacco farms in the State which, in itself, was a large job: due to the method of establishing acreage goals instead of a farm base acreage for other special crops like potatoes and commercial vegetables, many additional farms are placed in position to participate during 1938. Goals were established for practically every farm and so, potentially, at least, every farm is in position to take part in the program.

In order to issue marketing quotas tobacco and cotton compliance had to be secured, which means the measuring of the farm acreage planted to various crops by July 15, 1938 on all cotton and tobacco farms —a job usually done in September and October. The plane table farm mapping was extended in about 20 counties to complete this work so as to include all the farms. Air Photographs for twelve counties, Alachua, Uuion, Bradford, Columbia, Suwannee, Hamilton, Madison, Jefferson, Leon, Gadsden, Jackson and Holmes were delivered and used in compliance work. We also secured overlap pictures of certain areas in counties adjoining these as well as in counties adjoining Georgia and Alabama counties that were photographed from the air. These photographs show every farm in the county and furnish an accurate and the least expensive method known to compute the cropland and acres of special crops on a farm.

The control program for cotton and tobacco are new and the formulae set up by the act are rigid and, therefore, some farms did not receive quotas adequate to meet a situation which existed this year, when Florida tobacco growers made the largest yield per acre in history, with the sale price about one-third above parity. Most of these cases will be adjusted shortly by the Review Committees which act upon cases of dissatisfaction. Apparently there is more general satisfaction with the cotton quotas than with the tobacco quotas, since the cotton program permits a producer to market the full information from the allotted acres and thereby takes care of the situation when yields run above normal.

On the jobs just ahead one is the making of the cotton price adjustment payments on the 1937 cotton crop, which has not been possible up to now because any payment is conditioned upon compliance on the part of the producer with the 1938 program. These payments will begin sometime in September.

In 1938 the Sugar producers have a separate program under the Sugar Act and they have already been paid around half a million dlolars on the harvest completed in March.

In the 1938 program, terracing in the rolling lands that are subject to erosion, planting of improved pastures by cattlemen in South Florida, a variety of practices in connection with producing and turning in of various cover crops, and planting of forest trees in farm woodlots are soil-building practices under way in Florida on a large scale.

Before the year ends, the marketing quotas for 1939 must be worked out and placed in the farmers hands, cotton and tobacco referendums must be held, and a check up made of the soil-building practices actually carried out on the farms: also, preparations must be made to pay off early in 1939 the grants earned during 1938.

Already, plans for improving the 1939 program are under way and representative farmers from each of the 48 States spent 3 days in Washington recently taking stock and making suggestions. The general opinion was that few changes should be made—only small revisions to remove inequities and to better adopt the program to cer-

(Continued on page 19)

Control Of Melanose On Citrus

By Wm. A. Kuntz and Geo. D. Ruehle

(Concluded from last issue)

After the cold injury in 1934-35, this grove was commercially pruned by the owner, and in 1936, a comparison of several copper sprays in single and double applications was made. The materials, times of applications and results in fruit blemish control are reported in Table VI. This season there were again practically no first grade fruits and about 62 per cent culls when the trees were not sprayed. A single application of Bordeaux 6-6-100 on April 9th produced 57 per cent of first grade, with 7.7 per cent culls. Bordeaux 3-3-100 applied on the same date produced almost the same results. When a second half-strength Bordeaux was applied 4 weeks later the first grade was increased to 85 per cent, and fruits with more than 50 lesions per square inch were eliminated. These results are very close to Basic Cop. used with ½ per cent oil emulsion in single and double applications. The results with red copper oxide with lethane and cottonseed oil are relatively low in the single application. This might be attributed to the breaking of this emulsion, with a settling and coagulation of copper in the oil, before the spraying was completed. Apparently the second application of the red copper on May 7th was sufficiently early this season to be effective in controlling fruit blemish, for the trees so sprayed showed fruits with about one per cent culls, and 71 per cent of first grade. Under these severe conditions for the occurence of melanose on fruits the second application of a mild copper fungicide seems to be necessary and worth while.

From the studies on melanose control which have been carried forward to the points indicated in this brief paper, there are several generalizations which may be made at this time. Melanose as a disease of commercial varieties of citrus under Florida conditions can not be eliminated entirely from the trees; the causal organism is always present, producing varying degrees of damage from season to season. There are several strong modifying factors concerning the development of this disease which may determine the relative severity of infections from season to season and from grove to grove. Although these factors have not been studied in great thoroughness; cold injury, "cropping strain," and severe scale infestations should be avoided as far as possible to assist in securing better melanose control. Since these three factors are in a large measure responsible for the establishment of dead wood in citrus trees, there are times and seasons when pruning of a grove is an essential operation to allow the tree to regain its normal vigor after shock and to aid in lessening the abundance of the melanose fungus.

In general, the measures which are used for melanose control may depend to considerable extent on the purpose of the grower. If bright fruits are the sole objective, spraying must be emphasized. This operation is more essential for results in older groves than in younger plantings. If the trees have received severe shocks, which tend to

TABLE V

Effects of Spraying and Pruning in Control of Melanose Fruit Blemish. Dr. R. L. McMullen Grove, Largo, Fla. Seedling grapefruit trees, crop regular. (Approximately 100 fruits examined from each tree).

Season 1934

Plot Nos.	Date of Pruning	Spray Program: Materials	Concentrations	Dates Applied	Percentages of fruits; showing indicated numbers of melanose lesions per sq.in. surface: No. of Trees	No. Lesions	1-10	11-25	26-50	More than 50
1		Bordeaux-oil emulsion Bordeaux, cal. caseinate Oil emulsion	6-8-100;1% 6-8-100;1-100 1% oil	Jan. 26 Apr. 12 May 28	10	27.6	55.8	12.9	2.9	0.8
2		Bordeaux, cal. caseinate Oil emulsion	6-8-100;1-100 1% oil	Apr. 12 May 28	9	19.2	54.2	21.3	3.7	1.6
3	2-7-33 1-25-34	Bordeaux-oil emulsion Oil emulsion	6-8-100;1% 1% oil	Jan. 26 May 28	10	19.7	53.5	22.2	4.1	0.5
4	2-9-33 1-26-34	Bordeaux, cal. caseinate Oil emulsion	6-8-100;1-100 1% oil	Apr. 12 May 29	8	62.3	32.7	4.4	0.6	0.0
5	1-27-34	Dupont No. 2	1 ⅔-100	Jan. 26	8	0.7	33.0	44.9	18.9	2.5
6	1-29-34	Dupont No. 2	1 ⅔-100	Apr. 12	10	0.0	7.9	27.5	39.4	25.2
7		Dupont No. 2	1 ⅔-100	Jan. 26	9	0.0	0.6	12.5	42.1	44.8
8		Dupont No. 2	1 ⅔-100	Apr. 12	9	0.0	0.1	8.4	40.7	50.8
1c		Bordeaux, cal. caseinate Bordeaux, cal. caseinate Oil emulsion	3-4-100;1-100 3-4-100;1-100 1% oil	Apr. 13 May 4 May 29	9	17.2	62.7	15.4	3.6	1.1
2c		Bordeaux, cal. caseinate Oil emulsion	3-4-100;1-100 1% oil	Apr. 13 May 29	8	1.4	46.5	33.1	13.7	5.3
9,3c		Check (unsprayed)			10	0.0	0.4	9.8	37.2	52.6

greatly modify the abundance of the melanose fungus, and the objective is not necessarily bright fruits, then pruning is the operation which should be emphasized. There can be no doubt at this time, but that the combined pruning and spraying of citrus trees will produce the best results, both from the standpoint of the trees and also in the production of bright fruits. We are at present attempting to balance these operations for you. Your own observations and practices must be your guides toward the balancing of spraying and pruning under your particular grove conditions.

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TABLE VI

Effects of Spraying in Control of Melanose Fruit Blemish. Dr. R. L. McMullen Grove, Largo, Fla. Seedling grapefruit trees, crop regular, trees commercially pruned. (1000 fruits examined from each plot).

Season 1936

Plot Nos.	Spray Program: Materials	Concentrations	Dates Applied	No. of Trees	Percentage of fruits, showing indicated numbers of melanose lesions per sq. in. of surface. No. Lesions	1-10	11-25	26-50	More than 50
1,2	B'd'x oil emulsion 6 6-100;	¼ %	Apr. 9						
1,2	Oil emulsion	1.25% oil	July 8	19	9.0	48.0	21.1	14.2	7.7
	B'd'x oil emulsion 3-3-100:	¼ %	Apr. 9						
3,4	B'd'x coll. sp'd'r	3-3-100; ½-100	May 7	18	16.3	68.7	14.1	0.8	0.1
	Oil emulsion	1.25% oil	July 8						
	B'd'x, oil emulsion 3-3-100:	¼ %	Apr. 9						
1c,2c	Oil emulsion	1.25% oil	July 9	14	5.2	54.2	28.4	11.2	1.0
	Basic cop, oil emulsion 3-100,	½ %	Apr. 9						
5	Basic cop, oil emulsion 3-100;	¼ %	May 7	9	7.2	71.8	17.9	2.9	0.2
	Oil emulsion	1.25% oil	July 8						
	Basic cop. oil emulsion 3-100	½ %	Apr. 9						
6	Oil emulsion	1.25% oil	July 9	10	3.5	58.4	26.6	9.6	1.9
	Cuprocide, lethane, cotton-seed oil 1-100; 1 qt.-100; 1 qt-100		Apr. 10						
7*	Cuprocide, lethane, cotton-seed oil 1-100; 1 qt.-100; 1 qt-100		May 7	10	5.3	65.9	19.9	7.9	1.0
	Oil emulsion	1.25% oil	July 8						
	Cuprocide, lethane, cotton-seed oil 1-100; 1 qt.-100; 1 qt-100		Apr. 10						
8*	Oil emulsion	1.25% oil	July 8	10	0.4	18.4	26.6	35.4	19.2
9	Check (unsprayed)			12	0.0	2.4	5.0	30.2	62.4

* In the first application made on April 10, this mixture of material broke from the emulsion before spraying was completed.

WELLS A. SHERMAN RETIRES

Was Pioneer in Department's Fruit, Vegetable Market News and Regulatory Work

Wells A. Sherman, for the past year in charge of the fruit and vegetable marketing and regulatory work of the Bureau of Agricultural Economics, retired from Government Service on July 31. Mr. Sherman, who has been in Federal service for nearly 43 years, leaves his present post under automatic retirement.

Entering the Government service in 1895 in the original Division of Statistics, Mr. Sherman resigned in 1903 to serve as examiner in the Civil Service Commission. In 1910 he reentered the Department of Agriculture in the Bureau of Plant Industry where he remained until the creation, in 1913, of the Office of Markets, later the Bureau of Markets, and eventually a part of the Bureau of Agricultural Economics.

Mr. Sherman was in charge of the experimental work which led to establishing the market news service on farm products in 1915, and was largely responsible for the development of this service. During the past year the market news service on fruits and vegetables maintained 22 permanent offices, and temporary offices were set up in 44 commercial shipping areas.

In January, 1918, Mr. Sherman was entrusted with the collection of excess profits made in wool under war regulations and for several years administered work in addition to his regular activities in the Fruits and Vegetables marketing field. In 1929 the Division of Fruits and Vegetables was established under his direction. The expansion of this Division was rapid, particularly the inspection service which in 1922 was extended to shipping points.

Sherman's work in organizing the nationwide shipping inspection service for fruits and vegetabes is one of his outstanding accomplishments. During the past year this service operated on 50 receiving markets and in shipping areas in most all States under cooperative agreements with State agencies. During the past year the Bureau's inspectors certified more than 400,000 carloads of fruits and vegetables.

The Produce Agency Act of 1927, the Standard Container Act of 1928, the Perishable Agricultural Commodities Act of 1930, and the Export Apple and Pear Act of 1933 have been administered since their beginning under Mr. Sherman's direction.

The Feather-Legged Fly

— Characterized As A Friend Of The Farmer After Extensive Study Of Its Capabilities As A Destroyer Of Plant Bugs . . . By Assistant Entomologist At The Experiment Station . . .

Flies

H. E. Bratley

House flies and some others are very troublesome pests to human beings. Exceptions to this rule are feather-legged flies and some of the tachinid flies. Florida growers do not generally appreciate or realize the good these feather-legged flies do in destroying various species of plant bugs.

In order to fully appreciate these flies, we should know something of their life history. When an adult fly lays its eggs it cements them to the back of one of several species of the plant bug family. The grubs hatching out from these eggs gnaw their way through the hard outer shell of the plant bug and feed on the soft body tissue within. For the first few days this feeding is confined to the fatty tissue but as the grub grows larger it works its way into the more vital organs of the host. When ready to pupate, the grub gnaws a large hole in the bug's armor and crawls out. It then enters the ground where it passes into the pupal or resting stage. The grub spends nearly three weeks in the plant bug host and about twelve days in the pupal or resting stage in the ground before it emerges an adult fly.

At first glance, these feather-legged flies might be mistaken for some member of the wasp or bee family. Their body color is light amber, shading to almost black at the head and tip of the abdomen. The wings are darker and a few have some amber on the front margins. The adult fly is about ⅝ to ½ inch in length from the head to the tip of the abdomen. With wings expanded they are about ¾ inch wide. They lack the narrow waist of a hymenoptera, which distinguishes them from bees and wasps. When at rest, the wings are not held close to the body, or folded over the back, as are the wings of the wasp.

A number of years ago the southern green stink bug, or "pumpkin bug" as it is commonly called by our growers, was imported into Australia. As sometimes happens when an insect is introduced into a habitat other than its native home, it left its natural enemies behind. With no natural check on their multiplication,

pumpkin bugs became so numerous in Australia that they were a serious menace to agriculture. Several attempts were made to establish these feather-legged flies in Australia with the Entomology Department of the Florida Agricultural Experiment Station co-operating in collecting and starting on their journey specimens of the southern green stink bug bearing the eggs of this parasite. Because of the length of time required for the journey, so far we have been unable to successfully introduce this parasite into Australia.

Comstock tells us the feather-legged fly is one of five species of tachina flies that parasitize members of the plant bug order. I have observed at least one other tachina fly emerging from plant bugs that apparently bore eggs of the feather-legged fly. The eggs of each of these tachina flies are white and appear to be about the size of the blunt point of a common pin. These eggs are deposited usually on the back of the bug host, but there does not seem to be any set rule about their placement. This cousin of the feather-legged fly resembles a house fly magnified about six times in color and form.

The condition of the food supply for both the plant bugs and the adult parasitic flies in the late summer and fall determines largely their population the following spring. The adult flies feed upon the nectar of flowers. So, if dry weather exists and plants fail to bloom, these flies suffer more than their hosts, the plant bugs. There are usually large numbers of both bugs and flies in the late summer and early fall. Since the flies are less able than plant bugs to endure adverse conditions, if weather conditions are unfavorable there is a smaller percentage of parasitization by these flies. On the other hand, low temperatures affect the plant bugs to a greater degree than they do the parasitic flies.

The fact that these flies are parasitic to plant bugs makes them an important ally of the farmer and the fruit grower. Sixty to seventy-five per cent of parasitization is considered good among green stink bugs. For the past several years, an ever-increasing number of other plant bugs has shown parasitization. Parasitization on the southern green stink bug gradually increased until 1937. Last fall there was a great decrease in the number of bugs bearing the eggs of parasites. Last winter and spring, there was a decrease in plant bug population as well.

A grower who finds plant bugs numerous and does not note the eggs of these parasitic flies on them should go to some locality where parasitized bugs are numerous and collect them and take them back to his place. In this way the parasites are introduced to assist in controlling the plant bugs and the spread of this beneficial fly is effected. However, do not expect a rapid reduction in plant bug population because it takes two or three weeks before the parasites can complete their life cycle and choose a new victim.

If plant bugs should be causing severe damage to a crop, it is best to collect the bugs in kerosene and water early in the morning or late in the evening when the pests are sluggish. After this collection, the importation of bugs with the eggs of parasites on them may be used to handle those that escape.

Parasites are the best control for plant bugs — their natural enemies. These flies work silently and efficiently with a minimum of cost and labor to the grower.

"So your name is George Washington?" the old lady asked the small colored boy.

"Yessum."

"And you try to be exactly like him, or as nearly as possible?"

"Lak who?"

"Why, like George Washington."

"Ah kaint help bein lak Jajh Washin'ton.' cause dat's who ah is."

Sam: "You look all in today, Bill. What's the trouble?"

Bill:"Well, I didn't get home until after daylight, and I was just undressing when my wife woke up and said, 'Aren't you getting up pretty early?" In order to save an argument I put on my clothes and came down to the office."

RUST MITES WORKING RAPIDLY

A warning to citrus growers to be on the watch for rust mite damage was issued by the Florida Citrus Commission.

W. W. Hubbell, head of the better fruit department of the Commission, said that reports from the Commission's field agents, and from growers and shippers, indicated that rust mites were working rapidly, in spite of the heavy rains, and that serious damage to the quality of the coming crop was threatened in all sections of the State.

All growers are urged to watch their crops closely, and to spray or dust immediately if this insect is seen in appreciable numbers.

MASCULINE PRIDE

Recently, in the French Parliament, one of the Deputies, making a speech urging the improvement of women, cried: "After all there's very little difference between men and women!"

With one accord, the entire Chamber of Deputies rose and shouted as one man: "VIVE LA DIFFERENCE!

"Bredren, we must do something to remedy de Status Quo," said a negro preacher to his congregation.

Brudder Jones, what am the Status Quo?" asked a member.

"Dat, my brudder," said the preacher, "am Latin for de mess we's in."

FIFTH ANNUAL CITRUS GROWERS' INSTITUTE

(Continued from page 7)

is required for each person when reservation is made. This will be credited to you at Camp. Make all checks payable to the Citrus Growers Institute. Aside from personal articles, it will be necessary to bring linens including sheets and pillow cases.

Entertainment and Recreation

Entertainment will be at its best with Billy Matthews directing and Roy Young (Central Florida's great pianist) Wilmer Bassett and Clayton Perreault, assisting. Contests in set-back, bridge, checkers, horseshoe pitching and fishing will be in charge of G. T. Huggins as in the past. Boats will be available for the fishermen.

Citrus Growers Institute Staff

Prof. A. P. Spencer, Vice Director, Agricultural Extension Service, Honorary Camp Director.

W. T. Nettles, Extension District Agent, Camp Director.

K. C. Moore, Orange County Agricultural Agent, Assistant Director.

Mrs. Lucie K. Miller, Lake County Home Demonstration Agent, Hostess.

R. E. Norris, Lake County Agricultural Agent, Institute Manager.

H. H. Hethcox, Umatilla, Registrar.

Karl Lehmann, Sec'y, Lake County Chamber of Commerce, Director Publicity.

Billy Matthews, Director, Florida Student Union, Director of Recreation.

Clayton Perreault, County Director of Public Recreation, Ass't. Director, Recreation.

W. W. Bassett Jr., Assistant Lake County Agent, Ass't. Director, Recreation.

Roy Young, Orlando, Pianist.

PEST ERADICATION WORK IN FLORIDA

(Continued from page 9)

though there had been no previous instance of its having been stamped out elsewhere. Fortunately, it was confined to the one island and protection of the mainland was not so difficult. Unfortunately, however, the population of Key West, having no commercial fruit industry, was entirely indifferent, to put it mildly.

Rigid quarantines kept the pest confined to the island, and eradication measures which the inspectors applied doggedly for the three years wiped it out. At an expense of $154,993.66, the Florida citrus industry was saved the heavy cost of additional spraying during all future years. No doubt considerable sums would have been expended in suppressing the pest in abandoned and neglected properties and on non-citrus hosts.

Surcease from the trouble with insect enemies is not for long, however. A horde of the pests is constantly knocking at the door, seeking admission to destroy crops and annoy mankind throughout eternity. Port inspection is effective in keeping most of them from enjoying hospitality in this country, but bootleggers and alien smugglers don't land at recognized ports. Often they bring fruits from tropical islands along with their cargo.

The Mediterranean fruit fly affords an instance where a much more severe pest which had gained a considerable foothold was eliminated in the face of what appeared to be insurmountable difficulties. Truly, this is a chapter of history well worth reading by those inclined to accept new pests as inevitable and who believe that eradication is just another word in the dictionary.

Larvae or maggots of the Mediterranean fruit fly were found in fruit from a grove at Orlando on April 6 by Inspector J. C. Goodwin of the Florida State Plant Board. The larvae were definitely identified in Washington on April 9, the adults the next day. Announcement of the infestation was made on April 15, when the State Plant Board promulgated regulations intended to prevent, as far as possible, the spread of the fly to other parts of the state. Federal quarantines were imposed on May 1.

Although a major pest of plants had never before been driven from the shores of any land, federal and state forces did not hesitate to inaugurate a campaign with this very end in view. Leading growers who recalled the citrus canker fight requested it, a large number making a special trip to headquarters at Gainesville for the purpose. As Dr. Wilmon Newell, plant commissioner of the State Plant Board and agent of the United States Department of Agriculture who led the fruit fly eradication effort, later said: "Who decided to eradicate the fly, and why did they so decide? The question never occurred to any of us at the time, but I think the truth of the matter was that the attempt to eradicate it stood out as being self-evidently necessary, and while it had never been done elsewhere, nevertheless it still remained apparently the only thing which could save Florida and her industries from a long trial of ills and troubles in the future, and particularly did the situation appeal in that way to those who knew the history of the pest in other countries.

"The question was never raised, so far as I know, in the Department of Agriculture, or in the meetings of the State Plant Board, or by the leaders of the citrus and vegetable industries of the state as to whether or not the fly should be eradicated. It was the self-evident thing to do. As a man pushed into a corner and threatened with his life, will naturally fight, he does not stop to debate whether or not he will win the fight, but when he is compelled to fight for self preservation, he fights."

And this Mediterranean fruit fly campaign developed into one of the most hectic non-military battles in the history of civilization. Dr. Newell, who already headed the State Plant Board forces, was chosen by the United States Department of Agriculture as the most logical man to lead it. Striking hard and fast, he organized a force of inspectors, and crews of eradicators in a very few days. At first known to exist only around Orlando, the fly was soon found in other areas, some miles distant. Reports showed 364 infested properties found in April, 378 in May, 185 in June, 64 in July, 8 in August, and a light one in November, 1929. On March 4, 1930, another light infestation was discovered, bringing the total to 1,001 properties thus reported. Only one other infestation was ever discovered.

The magnitude of the undertaking can be appreciated when it is stated that within the boundaries of the section where eradication methods were applied, containing between 15,000 and 16,000 square miles and approximately 10,000,000 acres scattered over 20 counties, were located some 120,000 acres of citrus groves and about 160,000 acres of other host fruits and susceptible vegetables.

Three principal lines of attack were followed. First was prevention of further spread of the fly by state and federal quarantines. Inspection forces were maintained at all passage points to prevent susceptible fruits from leaving the area, by private or public vehicle. To aid growers in marketing their products, plans were put into effect for treating and certifying fruits for shipment.

The second measure was the clean-up, or removal from private and commercial properties, residential lots, abandoned properties, and even from wild lands, of all fruits in which the Mediterranean fruit fly could lay its eggs or propagate its kind. This was done on a vast and intensive scale by the federal crews, fruit and vegetable growers, and municipal authorities from late April through the summer of 1929.

Application of bait sprays constituted the third part of the program. Fruit removal stopped propagation of the fly, and poisoned sprays applied to small areas of the trees aided in killing adults remaining.

Research work at the Orlando laboratories of the Department supplemented the eradication efforts and aided in determining what fruits and vegetables were hosts and answering the numerous questions which arose in connection with the campaign.

Grower cooperation was generous throughout the campaign, but as was natural under the circumstances, some growers and others opposed the work. Reports were circulated that the fly had been in Florida 50 years, to the personal knowledge of certain growers. Others claimed that fly never had been in the state, and was not there at the time. Still others boldly accused the inspectors of planting the fly in their groves. Disgruntled politicians who couldn't pay off political debts by getting fruit fly jobs for their friends — jobs were held to a merit basis — spread discontent.

Congress appointed an investigating committee which held hearings in Orlando. Federal and state funds became exhausted early in 1930, the work was greatly curtailed, then almost entirely stopped, and renewed when more funds were supplied.

Intensive inspections during the summer of 1930, in groves, on city lots, and in wild, swampy lands inaccessible to all but the most hardy and determined, gave testimony to the fact that the quarantine and

clean-up measures applied the preceding winter had been more effective than their proponents dared hope. Finally, as the 1930-31 Florida shipping season was getting well under way, the Department of Agriculture lifted federal quarantines on Nov. 15, 1930. Although inspection was conducted for several months following, the battle had been won, the enemy had been vanquished, and a task which even the most optimistic believed would require 5 to 10 years had been concluded in 18 months.

So notable was the accomplishment that Dr. W. C. O'Kane, head of the Crop Protection Institute who was brought to Florida as chairman of the Federal Fruit Fly Board, said "As long as I live I shall never cease to admire and respect and wonder at the people of Florida for accomplishing what they accomplished at that time."

Citrus canker, the Mediterranean fruit fly, the citrus black fly — three runs, and no errors in three innings, if we may transfer from war to baseball terms.

While he would be the last to claim credit for the accomplishments, Dr. Wilmon Newell generally is given credit for the eradication idea and its success in Florida. Coming to Florida in 1915 when the State Plant Board was created to wipe out citrus canker, he has led the board's forces from that time. Since 1921 he has served also as dean of the College of Agriculture and director of the Experiment Station and Agricultural Extension Service.

Thoreau said "there are thousands hacking at the branches of evil to one who is striking at its roots." Dr. Newell is most certainly one among thousands, for he believes in extermination rather than control. He much prefers to root out a pest and destroy it than hack at its branches each year to the end of time. He inaugurated the system of eradicating American foulbrood in apiaries by burning bees, hives, honey, brood and all infected materials.

In the 23 years since 1915, while one disease — canker — and two dangerous insects — Mediterranean fruit fly and the black fly — have been exterminated from the boundaries of Florida, such devastating pests as the Japanese beetle, European corn borer, Oriental fruit moth and Asiatic garden beetle have saddled themselves onto the United States for keeps. Agreement is unanimous that most of these could have been eradicated soon after their discovery, but in a few years extermination was impossible.

The Japanese beetle was found in Burlington County, New Jersey, during the summer of 1916. Only 12 specimens were found over an area of one-half square mile — eradication here would have been almost as child's play in comparison with the Mediterranean fruit fly campaign. Repressive measures were undertaken, and in 1919 quarantines were established. But restrictive embargoes seldom restrict the spread of an established pest, and the beetle has continued to spread, migrating by natural means five to 10 miles a year, heading westward and southward, especially the latter.

In the summer of 1917 the European corn borer was discovered in the vicinity of Boston, scattered over an area of 100 square miles and believed to have been imported in broom corn about 1910. By 1919 it was found at Scotia, N. Y., and in Erie County, Pa. In a few more years it was around Lake Erie, in both the United States and Canada. In Farmer's Bulletin No. 1562, published by the Department of Agriculture in January, 1938, a joint committee of the American Society of Economic Entomologists, American Society of Agronomists, and American Society of Agricultural Engineers is quoted as saying, "It will be impossible to eradicate the borer or even to prevent its spread to corn-growing areas not yet infested." Corn farmers of the United States must pay toll to the borer to the end of time.

In 1921 came another pest, the Asiatic beetle, discovered near Rutherford, N. J. Not until 1926 was it identfied by its true name. Its spread is not rapid, but by 1932 it was in Connecticutt, Delaware, the District of Columbia, Maryland, New Jersey, New York, Pennsylvania and Virginia. It merely defoliates ornamental garden plants and ruins lawns, so it is not as serious as some of the others, but it is still spreading.

The Oriental fruit moth was discovered in this country in 1916, believed to have been imported about 1912. It is now ravaging peach twigs and fruit in all the principal peach growing states east of the Mississippi River, and in several to the west of it. The pest also attacks quinces, and will transfer to apples growing near peaches.

All of these pests, and particularly the Japanese beetle, were confined to relatively small areas when first discovered. There were some who clamored for eradication in each case, but their cries went unheeded. The populace was not sufficiently

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The Growers' Own Page

This department is devoted to the growers, for their use in giving expression to their views and a discussion of growers' problems. Any grower is welcome to make use of this department for the discussion of topics of interest. The only requirements are that the articles must be on some subject of general interest, must be reasonably short and must be free from personalities. The editor assumes no responsibility for views expressed, nor does publication imply endorsement of the conclusions presented.

THE NEED OF ADVERTISING

Orlando, Fla., Aug. 3, 1938
S. L. Frisbie, Esq.,
550 North Broadway,
Bartow, Florida.
My dear Mr. Frisbie:

I read with considerable interest your editorial on citrus advertising as published in your August issue of The Citrus Industry.

For some time as an organization we have tried to investigate the "whys" of ctirus buying and we have found that the greatest argument possible is the health value of citrus fruit, and the only way that we can successfully compete for our place in the consumer's stomach is to push this health story. Our present advantage in citrus-Vitamin C - is being taken away from us by this synthetic product of Vitamin C.

It is our contention that the State of Florida must find new health stories to tell about citrus fruits in order for us to create new consumers. Too many of us, I fear, feel that any kind of advertising is a cure-all. California, much more successful in its advertising, believes in telling health stories, heretofore they have spent considerable sums of money finding out health stories to tell. They are willing to spend more if Florida will cooperate. Naturally what helps them helps us from the standpoint of more orange consumption.

Dr. Phillips and I have been campaigning to have the Citrus Commission set aside a substantial sum of money for research in the health value of citrus fruit so that we shall have new stories to tell. So far our efforts have met with a luke warm reception. I earnestly and fervently believe that our ideas are sound. They have worked in our business and have worked for the California Fruit Growers Exchange and there is no reason why they cannot work for us.

It has been our experience that one doctor sold on an idea is worth a thousand people sold on the same idea. In order to sell a doctor or a dentist concrete evidence must be presented. Already the California Fruit Growers Exchange has done marvelous work with the dentists in convincing them that orange juice is an aid to tooth formation and to dental health.

There are many stories that seem possible for us to tell, but which have had inadequate research so far. The effect of citric acid in the assimilation of calcium; the ability of grapefruit juice and orange juice in the treatment of common colds: the use of citrus fruit juices during pregnancy; the use of citrus juices pre and post operatively (did you kuow that many of the best hospitals in the United States are using Coca-Cola as a sole diet immedia ely after an operation?) These are things which could be answered perhaps to the profit of the citrus growers. No one organization save the Florida Citrus Commission has sufficient funds to institute the research. It would seem highly desirable that they do so.

If this bare outline of our ideas interests you I shall be happy to go into the matter more fully and explain what we have in mind. I am in hearty accord that the right kind of advertising can do us lots of good.

Faithfully yours,
HOWARD PHILLIPS.

Ask Chain Stores To Co-operate In Grapefruit Campaign

The Florida Citrus Commission held a busy session last week and decided to again appeal to the National Association of Food Chains for cooperation in the form of a national grapefruit campaign.

Marvin H. Walker, secretary-manager of the Florida Citrus Producers Trade Association, asked the Commission to authorize Chairman John Maxey to designate someone in the industry to attend a conference of the agricultural committee of the National Association of Food Chains so as to emphasize the necessity of a citrus promotion campaign in the winter months. Authority was granted.

Walker said both the chains and

the independents have so many requests for assistance that the industry must start early to get in the national program.

Murl Pace, manager of United Shippers and Growers, Inc., brought up the question of interpreting the wage and hour bill and the situation was discussed. A committee had already been named to consider the matter.

Dave Newell, nationally known sportsman of Leesburg, who is preparing a promotional motion picture to be shown at the Florida National Exhibit at the New York World's Fair, reported substantial progress in securing citrus industry scenes by the Commission. The sum of $12,000 has been appropriated for the film.

Arthur Kudner, president of the advertising agency handling the Citrus Commission account, advised that he would personally present plans for the coming campaign at the meeting of the Commission, September 12.

It is expected that five new members will be named to serve on the Commission to succeed those whose terms expire September 10.

REVIEW OF THE 1939 AGRICULTURAL CONSERVATION PROGRAM IN FLORIDA

(Continued from page 10)

tain special areas. One recommendation that will be of interest to Florida was to have vegetables more adequately covered by the program. Vegetable growers from the South, Northeast, and West devoted considerable time to this vegetable problem. The consensus of opinion was that agriculture now has available the best laws that have ever been available to assist it and that few changes would be needed to iron out the rough spots that now exist. The ever normal granary, availability of loans to put a floor under staple crop prices, crop insurance, and the sugar and conservation provisions, all tend to round out a full-fledged farm program. There are some interests unfavorable to such a set-up for agriculture and the outcome will be dependent upon how well farmers understand and agree to work together toward the stabilization and improvement of general agricultural conditions. Consumers have an interest in this program because they are concerned with our greatest national resource the soil and the welfare of the large percentage of the total population engaged in agriculture is reflected in the general economic condition of all others.

In closing, let me again say this is a busy time in connection with the agricultural program and, with the outlook as it is, the machinery will be needed to take care of conditions which appear ahead. It will be early in 1939 before all information will be available on the full results of the 1938 program.

CHILD PRODIGY

Little Lucy had just returned from the children's party and had been called into the living room to be exhibited before the tea guests.

"Tell the ladies what mama's little darling did at the party," urged the proud mother.

"I frowed up," said little Lucy.

PEST ERADICATION WORK IN FLORIDA

(Continued from page 17)

aroused to the danger threats.

But the old order changeth and a new school of thought gains ascendency. The wisdom of prompt action to free the country of an unwelcome guest is realized by a much larger proportion of the population. Farmers and others appreciate the fact that it is better to get rid of the bug than to try to learn to live with it, and to pay it toll throughout unending years. They don't want to bow down the knee to an alien god.

And a new one which bids fair to rival the Japanese beetle in damage has made its unwelcome appearance recently. As early as 1935 or even sooner, farmers of Walton County, Florida, complained of the new pest. The following year the County Agent sent specimens to State Experiment entomologists who in turn forwarded them to the USDA in Washington for identification, and the animal was identified as the white-fringed beetle from South America.

In South American countries it is said to cause very little damage, probably being held in check by natural parasites. But in this country it is a thoroughgoing destroyer of crops. Its larvae attack the roots of corn, peanuts, sweet potatoes, velvet beans and other annual field crops and so damaging are their ravages that a number of infested farms have been abandoned.

The white-fringed beetle is a wingless insect and consequently its spread by natural means is slow. However, it is remarkable in that all of the specimens so far discovered are females and give birth to young parthenigenetically or without fertilization, and one beetle can start a whole new infestation. If eradication should be attempted, it would necessitate the removal of the absolute last beetle.

At first known to be only in two counties of western Florida and an adjoining county of southern Alabama, the new pest was found by Department of Agriculture scouts in scattered areas of Mississippi and Louisiana. It is now believed to have come in through the port of New Orleans and scattered gradually eastward.

Department press releases say that every practical way of halting and eradicating a new insect crop pest, including the use of poison dust, flame throwers, oils and weed killers, traps and starvation are being tested against the white-fringed beetle this summer. Scouts are roaming the country seeking specimens and urging farmers, 4-H club boys and girls, Future Farmers, members of civic clubs, and others to report the presence of the beetle, that none may be overlooked.

Many miles of temporary barriers — trenches and furrows — around infested farms and along the highways last year delayed the migrating beetles, which cannot fly. They cannot crawl out of a trench with smooth sides, and are easily killed by sunshine or by flame or kerosene. When the trenches fill, however, they easily accomplish passage.

Embargoes designed to prevent the transportation of infested products from regulated areas have been imposed by affected states, and are being rigidly enforced. Research aimed at securing more information about the beetle, its habits and control, has been inaugurated at a special laboratory in Florala, Alabama. Lack of knowledge of the beetle has been a handicap heretofore.

"The full-grown white fringed beetle(**Naupactus leucoloma**) is about a half inch long and one-seventh inch wide," says a Department announcement. "It is stout and heavy, with a snout shorter and broader than the boll weevil. It is gray, with a whiteish strip or fringe along each side. Its black eyes are conspicuous on the side of a broad gray head resembling somewhat that of a small mouse. When disturbed on the plant or on the soil, the beetle plays possum.

"White-fringed beetles do most of their damage as larvae — half-inch long, yellowish-white, fleshy grubs, somewhat curved and sparsely covered with hair. These grubs, which live entirely underground, feed on the roots of cotton, corn, peanuts, velvet beans, sugar cane, cabbage, sweet potatoes, and other plants. Most of the plants on which the grubs have fed wither and die very soon. Those that survive never yield good crops."

A new challenge arises every few years in the form of foreign insects which gain lodgment on American shores. With intercourse between countries and states growing apace and more and more utilizing modern transportation, it is necessary not only to keep a vigilant guard at the border, but to uproot a new pest soon after it is discovered. In no other way will man be able to hold his own in the desperate battle between himself and the horde of insect enemies which is dogging his steps every hour of the night and day.

Pickled Pears

3 pounds pears
4 cups sugar
5 cups water
3 cups vinegar
½ lemon
1 tablespoon ginger
A few whole cloves
1 tablespoon whole spices
1 stick cinnamon

Peel pears lengthwise and leave whole. Make a syrup of the sugar, vinegar and water. Tie the spice in a cheesecloth and add to the syrup. When the mixture begins to simmer, add the lemon rind and the pears and bring to a boil. Cool and let stand overnight. Then drain off the syrup and bring it to boiling point. Pack fruit in jars, cover with the syrup and process for 15 minutes at simmering point.

Three Layer Meat Loaf

1 lb. veal, ground
1 cup crackers or bread crumbs
2 eggs
¼ cup milk or meat stock
1½ teaspoons salt
Pepper
½ teaspoon celery salt
1 tablespoon lemon juice
2 tablespoons chopped green pepper
1 lb. beef round, ground
2 tablespoons chopped pimento
2 tablespoons melted fat
⅓ cup canned tomato puree
Slices of breakfast bacon

Mix veal with half the crumbs, 1 egg, the milk or stock, 1 teaspoon salt, pepper, celery salt, lemon juice and chopped pepper. Pack half of mixture into bottom of loaf pan. Mix the beef with the rest of the crumbs and salt, the pimento, the other egg, the melted fat and the tomato puree. Pack on top of veal mixture. Cover with the rest of the veal, and lay strips of bacon on top. Bake in moderate oven 1½ hours. Serve hot the first day, and sliced cold thereafter.

Among Our Advertisers - - -

SLOAN RELATES EXPERIENCE AS HORTICULTURIST AND FERTILIZER EXPERT

G. D. Sloan, president of the Superior Fertilizer Company of Tampa, carries elsewhere in this issue of The Citrus Industry the initial advertisement of his company for the fall season of 1938.

Questioned as to why he entered the fertilizer field, Mr. Sloan stated that it was because his whole life's experience and training has been devoted to the raising of citrus and to a study of horticulture and chemistry.

Mr. Sloan was reared in Polk county where he received his common and high school education. Following his graduation from high school he spent two years working in a citrus development in Polk county before entering the University of Florida where he specialized in chemistry and horticulture.

Following his graduation from the University he spent three years in the U. S. Department of Agriculture, leaving his position with the government to become manager of one of the largest citrus developments in Florida.

Mr. Sloan's first venture in the feriltizer business was in 1919 when he became field representative for the E. O. Painter Fertilizer Co., in the Winter Haven territory. After holding this position for two years he became horticulturist for the Virginia-Carolina Chemical Co., and later assistant division manager for that company.

In 1924 he became sales manager of the Gulf Fertilizer Co., later being named vice president, in which capacity he remained until 1936, when he entered business for himself in the company which he now heads.

The first year his fertilizer products were manufactured in Jacksonville, owing to the fact that he had no plant available in Tampa, In 1937, however, the present plant of his company was built in Tampa, being located at East Broadway and 47th street.

In speaking of his plant, Mr. Sloan said, "It is not the largest plant in the state, but it is economically arranged, equipped with the latest type machinery and of sufficient capacity to care for any immediate requirements.

"My knowledge of chemistry and soils," said Mr. Sloan, "enables me to secure the highest type of materials and combine them so as to insure maximum results."

In speaking of the business outlook Mr. Sloan indicated that with any sort of an equitable marketing arrangement the coming season should be a profitable one for the growers, and, he stated, "when the growers prosper everyone else prospers in like measure."

(See Superior Fertilizer Co., advertisement on page 4).

PUBLIC HEARING WILL CONSIDER WHITE FR. BEETLE QUARANTINE

A public hearing to consider a Federal quarantine because of white-fringed beetle infestations in Alabama, Florida, Louisianna and Mississippi was announced by Secretary Wallace. The hearing will be in Court Room 206 of the Post Office Building, New Orleans, La., at 10 A. M., September 15, 1938.

The white-fringed beetle, known to occur in South America, has become established in several areas in the four southern states, where an extensive survey in the current season has resulted in new findings.

This insect may be carried from place to place through commerce, especially that involving agricultural products and used implements. The eggs are deposited in soil and on various articles that may be moved in commerce, and may remain viable more than 5 months, hatching when conditions are favorable. The larvae can be transplanted with products which carry small quantities of soil. Adults may be attached to almost any object within their reach.

Both larvae and adults feed on a wide range of plants. The larvae have caused serious damage to numerous field and garden crops, and are exceedingly destructive to several important crops. It is reasonable to assume that the larvae and adults will attack many plants that are widely grown in other sections of the country and, if allowed to spread, may become a serious pest in other agricultural regions of the United States, the Secretary said.

POLK COUNTY TRUCK DEALER OFFERS COUNTY WIDE CUSTOMER SERVICE

The Tate-Phillips Company elsewhere in this issue of The Citrus Industry announces a county-wide service to all owners of International Trucks and McCormick-Deering Tractors.

This long established Polk county firm has expanded during the past few years and now maintains stores and service depots in Bartow, Lakeland and Winter Haven. For many years the company carried on its business operations entirely from its Bartow store, but with the increasingly wide territory in which their trucks and tractors were placed it was deemed advisable to arrange for a more widespread service with the result that their Lakeland and Winter Haven stores were established.

As J. W. Dame, manager of the company, expressed the present setup, "truck and tractor operators are never more than 40 minutes from a factory trained service depot."

This company has a most enviable reputation both from the standpoint of sales and service and with their easy accessibility to Polk county truck and tractor owners it is said they offer a service without parallel in the state.

THE UNRECOGNIZED PROBLEM

(Continued from page 6)

Acid, 1.26; Ratio, 11.37. As you see these Ratios are fairly close but can you visualize the flavor from these figures? Were both of these excellent, sweet, good, sprightly, rich, vinous, insipid or bland? Did they taste pretty much alike or was there a noticeable difference between their flavors? Would they yield equal satisfaction to the consumer or did one have a decided superiority over the other. If Messrs. Askew Stewart, Commander, Maxcy, Taylor, Chase, Woolfolk, Fosgate and Phillips write in answers to these questions I venture to say that considerable variation will appear. As a matter of precaution let it be added that No. 1 was a Valencia and No. 2 a Tangerine.

In some grapefruit experiments I took an equal number of fruits, cut them in half; then assembled the halves, the blossom end of one fruit with the stem end of another. The juice from one group was extracted by the regular fruit press and that from the other group was obtained by a hand reamer. Here is the result of a typical test:

Extractd by press, Brix 10.95; % Acid 1.40; Ratio 7.83; Flavor good but bitter.

Extracted by Reamed 11.05; % Acid 1.41; Ratio, 7.85; Flavor excellent, bitterness weak.

The bitterness principle, the naringin, in grapefruit is essential to its flavor but it must be neither too weak nor too strong. The point I wish to emphasize is that the present method of analysis fails to measure bitterness, as the above figures show. It is like trying to measure humidity with a foot-rule.

If we had adequate measures of citrus flavor, not only would it enable consumers to buy with intelligence, flavor is what they want, but prorstion would be simple. The requirements could be raised or lowered by the Commission according to supply and demand. Mr. Stewart pointed out what is a common experience, that fruit of good eating quality at times does not pass the test. Every year the northern markets report back to us that Florida fruit is not palatable. Our present standards are really a decided handicap to fruit of excellent flavor because these standards permit inferior fruit to compete with the superior, and the consumer cannot tell the difference until the purchase is made. In experimenting on citrus flavors I have developed a workable orange flavor scale which probably is applicable to tangerines. A grapefruit flavor scale is more difficult to develop but I believe it can be done.

Flavor is the basis of our industry and we have but little accurate knowledge of this feature. To sell on external appearance is to deceive frequently not only consumers but ourselves as well.

CLASSIFIED Advertisments

The rate for advertisements of this nature is only five cents per word for each insertion. You may count the number of words you have, multiply it by five, and you will have the cost of the advertisement for one insertion. Multiply this by the total number of insertions desired and you will have the total cost. This rate is so low that we cannot charge classified accounts, and would, therefore, appreciate a remittance with order. No advertisement accepted for less than 50 cents.

Meal, William G.

W. G. Meal Appointed Head Fruit and Vegetable Division

The appointment of William G. Meal to head the Division of Fruits and Vegetables in the Bureau of Agricultural Economics was announced recently by A. G. Black, Chief of the Bureau.

During the past 3 years Mr. Meal has been Assistant Chief of the General Crops Section in the Agricultural Adjustment Administration. During the 2 years prior to his appointment as Assistant Chief he was in charge of the Section's work relating to fresh fruits and vegetables. He assumed his duties Sept. 16 when he succeeds Wells A. Sherman, who left the Government service on July 31 under automatic retirement. Mr. Sherman had been in charge of fruit and vegetable marketing and regulatory work of the Department of Agriculture for nearly 25 years.

Mr. Meal was born at Lockport, N. Y., on April 16, 1900. He received his undergraduate and graduate training in New York State. After being graduated from Cornell University he was employed from 1923 to 1925 first as Junior Extension Agent in Tompkins county, New York, and then as County Agricultural Agent in Schenectady county. During the next four years he served as instructor in fruit and vegetable marketing in the Department of Agricultural Economics and Farm Management at Cornell University.

Mr. Meal entered Government service in September 1929 in the Division of Cooperative Marketing, of the Bureau of Agricultural Economics. He left Federal work temporarily in February 1931 and served nearly 2 years as extension economist in marketing with the New Jersey Agricultural Extension Service at New Brunswick.

As senior marketing specialist and later principal agricultural economist with the Agricultural Adjustment Administration since Oct. 6, 1933, Mr. Meal's work has been that of planning, coordinating and assisting with the direction of the marketing agreement and other programs affecting fruits and vegetables and specialty crops.

In charge of the Division of Fruits and Vegetables, Mr. Meal will supervise the Bureau's market news, inspection, research and regulatory work dealing with the marketing of fruits and vegetables. Year round market news offices are located at 21 terminal markets where information as to prices, supplies and other market factors are disseminated daily. In addition, more than 40 temporary field stations are maintained in the principal producing areas during the season of heaviest crop movement.

The research activities of the Division entail studies on marketing and preparation of fruits and vegetables for market, and on the grading and standardization of these commodities. United States standards for 55 fresh fruits and vegetables and a number of canned products have been established. An inspection service is maintained at produce shipping points and receiving markets the country over where growers and dealers using the standard grades may have the quality of their product certified by the Government. More than 500,000 carloads of fruits and vegetables were so inspected during the past fiscal

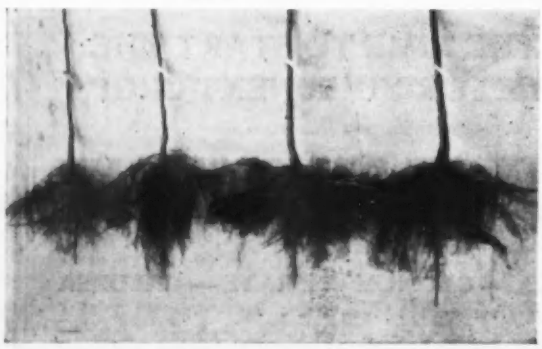
(Continued on Page 18)

Lake Garfield Nurseries Co.

Uniformity of Grove starts with
Selection of Seed and Seedlings

Budded in March, 1938. Photographed
Sept. 1938. Continued Uniformity

Budded April, 1937. Photographed
Sept. 1938. Result of Real Care.



¼ ½ ¾ 1"
Plenty of fibre roots starts the trees uniformly in grove

Uniform Groves

Advantages And Some Of The Things Necessary To Make Them

Everybody likes uniformity, but nature requires the help of man to produce and maintain it in most things that grow. A uniform orange or grapefruit grove is by far the most beautiful and attractive of all cultivated landscapes. One that lacks uniformity is — well, if you ever tried to sell one of this kind you know the many criticisms that can be found, and expressed, and about the only argument that can be advanced is that the price is low.

But, there are other uniformities besides appearance. Do the trees produce uniformly the varieties you thought were planted? Do they all produce good crops? You find many groves so mixed up as to varieties that it is hard to tell with what variety the grove was supposed to have been planted. In some groves there are many trees that seem to be "star-boarders," in that they do not bear much fruit, and this means production cost without returns. Watch the reaction of a prospective buyer when he sees any of these shortcomings—

That which is good to sell is usually good to keep, and vice versa. We merely mention the other fellow's views because there are always so many more groves for sale that lack uniformity than there are of the better type, and the price generally less than half. The same thing applies to fruit — if it is good to sell it is good to eat.

We are often asked why Lake Garfield trees possess those desirable uniform qualities that show up so well in groves planted with them. from the sprouting of the newly set tree and continuing to include the quantity and quality of the fruit produced.

A few reasons: We never buy seed, but we take the seed out of the fruit ourselves and know that they are true. We carefully cull out the seedlings; line them out in the Nurseries properly, to produce straight roots; use a balanced fertilizer with additional rare elements, at the right times; select the budwood from our own splendid bearing groves that have been carefully checked for this purpose; use only men with long experience for budding, and train the young buds so that they are straight. Culls go on the cull pile and are not sold at any price. Every care is used to give the purchaser plenty of fibre roots and these are kept well protected so they never dry out. They live — they grow — they bear. Come see us, or write us.

Lake Garfield Nurseries Co.,
Bartow, Florida